

NOTES ON SOME *RHYSSOPLAX* FROM
THE PACIFIC OCEAN
(MOLLUSCA: POLYPLACOPHORA: CHITONIDAE)

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Abstract.—Taxonomic comments are presented for the following *Rhyssoplax* from the Pacific Islands: *R. discolor* (Souverbie, 1866), *R. ectypa* (Rochebrune, 1884), and *R. rhynchota* (Rochebrune, 1884) from New Caledonia; *R. spinosetata* (Bergenhayn, 1930), from the Fiji Islands; *R. whitleyi* Iredale & Hull, 1932, from the Cook Islands; *R. perviridis* (Carpenter, 1865) from the Society Islands; *Rhyssoplax* sp. from the New Hebrides east to the Samoan Islands; and the widespread *R. pulcherrima* (Sowerby, 1842), which ranges from Southeast Asia to New Caledonia. The latter species is conspecific with *R. excellens* Iredale & Hull, 1926, *C. excellens capricornensis* Ashby, 1928, and *R. nierstrasziana* Kaas, 1957. *Rhyssoplax ectypa*, which has been considered a junior synonym of *R. discolor* for nearly a century, is recognized as a separate species. *Chiton* (*Clathropleura*) *pacificus* Thiele, 1910, is a junior synonym of *R. perviridis*. Thiele's (1910) published description and figure of the type specimen of *R. rhynchota* were erroneously based on *R. crawfordi* (Sykes) from South Africa.

Species of the polyplacophoran genus *Rhyssoplax* Thiele, 1893, are sporadically represented among malacological collections from the islands of the central Pacific Ocean, and their taxonomy is poorly understood. The predominant reason for this situation is the inadequate collections available for study. Large, well preserved collections from all major island groups will be required before sound taxonomic conclusions can be reached.

Study of many Pacific *Rhyssoplax* is also perplexing due to the inadequate published work of the past. The works of Rochebrune (1884 and other papers) especially have proved to be troublesome. Pilsbry (1893: 151), in a discussion of Rochebrune's use of the controversial name *Gymnoplax*, correctly observed the outcome of Rochebrune's efforts: "It should be noted that the irrepressible Rochebrune still uses *Gymnoplax* in a generic sense, in order presumably, to disguise his species;—an unneces-

sary precaution, for his diagnoses of Chitons generally defy identification of either genus or species." Iredale & Hull (1932:158) commented on the problems associated with type material in the Muséum National d'Histoire Naturelle in Paris: "Rochebrune ran riot among these shells in the Paris Museum. Using a classification of his own which has defied interpretation, he lost, mislaid and transferred labels and specimens, describing the types of former workers under different genera and then renaming his own new species until there is no confidence in any specimens of this class in that Museum." Bullock (1972) noted that some of this material is present in the Dautzenberg collection at the Institut Royal des Sciences Naturelles de Belgique in Brussels.

The zoogeography and phylogenetic relationships of Pacific Island *Rhyssoplax* will prove to be of great interest. Preliminary examination of the distributional patterns indicate that a few species, for example *R.*

pulcherrima (Sowerby, 1842), are broadly distributed across several island groups, while a larger number of species appear to be endemic to a single island group. Examples of the latter group include: *R. discolor* (Souverbie, 1866), known only from New Caledonia; *R. whiteyi* Iredale & Hull, 1932, found only in the Cook Islands; and *R. spinosetata* (Bergenhayn, 1930), reported only from the Fiji Islands. Major conclusions, however, must be made only after the taxonomy of the group is better known.

Materials and Methods

Specimens were examined from the major collections of the U.S. and Europe listed below. Additional material was received from the Western Australian Museum and the Australian Museum. Girdle scales of selected specimens were prepared for scanning electron microscopy (SEM) following procedures described by Bullock (1985). Samples were mounted on aluminum stubs using double coated tape, and coated with carbon and gold/palladium in a Denton DV-502 vacuum evaporator. All work was done using an ISI MSM-3 SEM located in the Department of Zoology at the University of Rhode Island.

The following abbreviations are used: AMS, Australian Museum, Sydney; ANSP, Academy of Natural Sciences of Philadelphia; BMNH, British Museum (Natural History), London; ICZN, International Code of Zoological Nomenclature; IRSN, Institut Royal des Sciences Naturelles de Belgique, Brussels; MCZ, Museum of Comparative Zoology, Harvard University, Cambridge; MHN, Muséum d'Histoire Naturelle de Bordeaux; MNHN, Muséum National d'Histoire Naturelle, Paris; NRS, Naturhistoriska Riksmuseet, Stockholm; USNM, National Museum of Natural History, Washington, D.C.; WAM, Western Australian Museum, Perth; ZMA, Zoologisch Museum, Amsterdam; ZMHU, Zoologischen Museum, Humboldt-Universität, Berlin;

ZMK, Universitetets Zoologiske Museum, Copenhagen; ZMU, Uppsala Universitetets Zoologiska Museum, Uppsala.

Genus *Rhyssoplax* Thiele, 1893

Rhyssoplax Thiele, 1893:368. Type species, *Chiton affinis* Issel, 1869, by declaration of the ICZN, Opinion 951.

Remarks.—In general, the name *Rhyssoplax* has been used for small to moderate-sized, non-New World polyplacophorans that are otherwise similar in shell and girdle scale morphology to the genus *Chiton* from the New World. Employment of *Rhyssoplax* at the generic level is not accepted by all polyplacophoran workers. Malacologists from Australia and New Zealand for the most part have championed this use, while others, for example Kaas & Van Belle (1981), have used *Rhyssoplax* as a subgenus of *Chiton* Linnaeus, 1758. Substantial radular differences exist between *Chiton* and *Rhyssoplax*: in *Chiton* the distal edge of the centro-lateral tooth is perpendicular to the longitudinal axis of the animal, while in all *Rhyssoplax* the distal edge is parallel to the longitudinal axis. Furthermore, the denticle cap of the major lateral tooth of *Rhyssoplax* is rather short with a circular black tab distally on the anterior surface. In *Chiton* the denticle cap tends to be elongate and the black tab is usually elongate. It is advisable to consider these groups as separate genera within the subfamily Chitoninae.

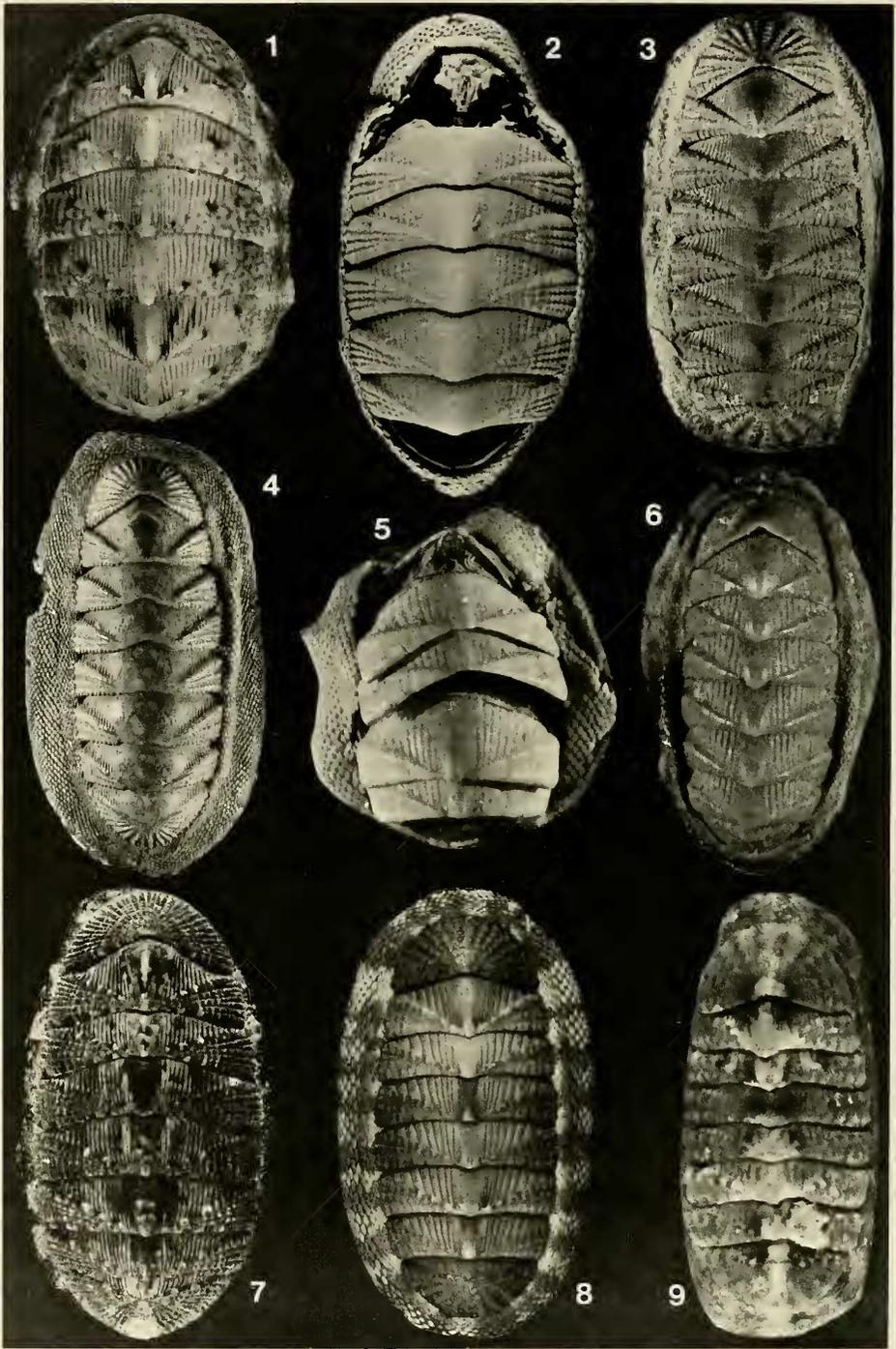
Rhyssoplax discolor (Souverbie, 1866)

Fig. 13

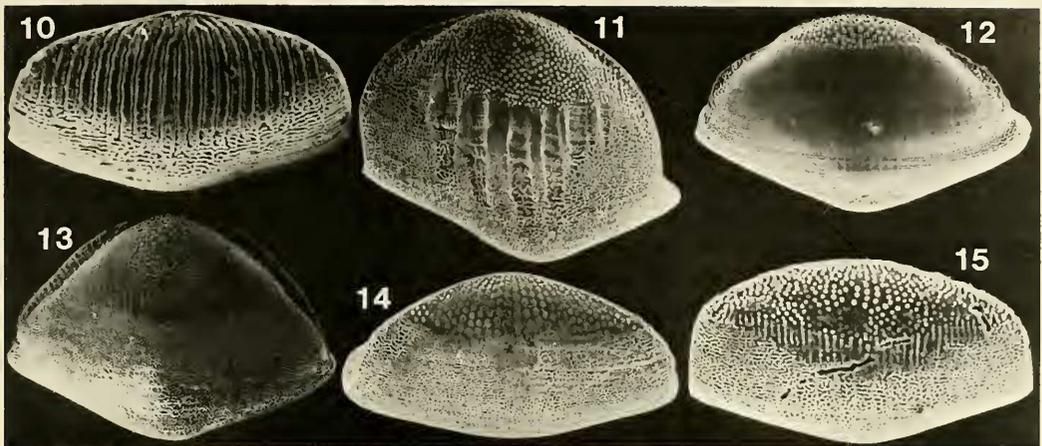
Chiton discolor Souverbie [in Souverbie & Montrouzier], 1866:252, pl. 9, figs. 1, 1a (ins. Art, l'Archipel calédonien; lectotype, selected by Strack [1986], in MHN).

Chiton tuberculatus Souverbie [in Souverbie & Montrouzier], 1866:251, pl. 9, fig. 3 (ins. Art, l'Archipel calédonien; holotype in MHN).

Chiton (Rhyssoplax) discolor Souverbie.—



Figs. 1-9. Shells of Pacific *Rhyssoplax*: 1, *Rhyssoplax perviridis* Carpenter, Arue, Society Islands, 11 mm [curled] (USNM 672794); 2, Holotype of *Chiton perviridis* Carpenter, Tahiti, Society Islands, 11 mm (MCZ 141125); 3, *Rhyssoplax ectypa* (Rochebrune), New Caledonia, 20.5 mm (BMNH); 4, Syntype of *Lepidopleurus egyptus* Rochebrune, 20 mm (MNHN); 5, *Chiton rhynchotus* 'Rochebrune' Thiele [= *R. crawfordi* (Sykes)], 9.5 mm



Figs. 10–15. Scanning electron micrographs of girdle scales of Pacific *Rhyssoplax*: 10, *Rhyssoplax rhynchota* (Rochebrune), W end, Ricaudy Reef, Noumea, New Caledonia, 291× (ANSP 271045); 11, *Rhyssoplax pulcherrima* (Sowerby), 3 mi [4.8 km] S of Airport Beach, Phuket Is., Thailand, 81× (ANSP 286765); 12, *Rhyssoplax spinosetata* (Bergenhayn), Korolevu, Viti Levu, Fiji Islands, 95× (ANSP 236891); 13, *Rhyssoplax discolor* (Souverbie), near radio station, Baie Ouemo, Noumea, New Caledonia, 46× (ANSP 271200); 14, *Rhyssoplax ectypa* (Rochebrune), 0–4 ft [0–1.2 m], Thio, New Caledonia, 107× (ANSP 238361); 15, *Rhyssoplax* sp., E side of Vailele Bay, Upolu Is., Western Samoa, 169× (ANSP 198086).

Strack, 1986:195, fig. 4a, b [description; types fig'd.].

Remarks.—*Rhyssoplax discolor* is a common species that varies considerably in color. Risbec (1946), who reported on the anatomy of this species, noted that on the rocks at Noumea *R. discolor* is second in abundance only to *Acanthopleura gemmata* (Blainville, 1825).

Pilsbry (1894) erroneously believed that *Lepidopleurus ectypus* Rochebrune is conspecific with this species, and all subsequent authors have accepted this conclusion. However, an examination of syntype material of *L. ectypus* [IRSN and NMHNP] (Fig. 4) revealed that it is distinct and not at all closely related to *R. discolor* (see remarks under *R. ectypa*).

The New Caledonian *R. discolor* is not very similar to *R. coryphea* (Hedley & Hull, 1912) from Norfolk Island, as Iredale & Hull (1932) suggested. *Rhyssoplax coryphea* is more highly elevated, more elongate, and has longitudinal ribs which only partly extend across the valve. The girdle scales of *R. discolor* (Fig. 13) characteristically exhibit a broad shelf across the apical surface and have many apical pustules; in *R. coryphea* this shelf is nearly lacking and the pustules are limited to a narrow region at the apex.

Locality records.—New Caledonia: Koe Reef, 2 mi [3.2 km] SSE Touho; Touho Bay; Koe, near Touho; Thio; Yate (all ANSP); Noumea Harbour (AMS); Port Ngéa, Magenta, Noumea (ANSP); Baie des Isoles,

←
[curled] (NMHNP); 6, *Rhyssoplax rhynchotus* (Rochebrune), barrier reef, 5 mi [8 km] WSW Gatope Is., Voh, New Caledonia, 9.5 mm (ANSP 269722); 7, *Rhyssoplax spinosetata* (Bergenhayn), N shore of Port Ellington, NNE Viti Levu, Fiji Islands, 17.5 mm (MCZ 279505); 8, *Rhyssoplax whiteleyi* Iredale & Hull, 0.25 mi [0.4 km] N of Matavera, NE Rarotonga, S Cook Islands, 11 mm (MCZ 252808); 9, *Rhyssoplax* sp., E side of Vailele Bay, Upolu Is., Western Samoa, 7 mm (ANSP 198086).

Ouemo, Magenta, Noumea (AMS); S side, Baie de Citron; Baie de Citron, Noumea, in 1–6 ft [0.3–1.8 m] (both ANSP); Île Cesar, Anse Vata, Noumea (AMS); mouth of stream entering Anse Vata Bay, Noumea, in 2–6 ft [0.6–1.8 m]; Tonghouen Bay, 45 km N of Noumea; Plage de Poe, Bourail; S side, Gatope Is., Voh; SW side, Isle Mouac, Poume; 2 mi [3.2 km] N of Poume (all ANSP).

Rhyssoplax ectypa (Rochebrune, 1884)

Figs. 3, 4, 14

Lepidopleurus ectypus Rochebrune, 1884:37 (Nouvelle Calédonie; syntypes in IRSN and MNHNP).

Description. — Animal medium in size, up to 38 mm in length, 19 mm in width. Valves subcarinate, angle about 90°. Anterior valve straight to convex; post-mucral slope of posterior valve abrupt, concave at first, convex ventrally. Mucro moderately sharp, often worn, centrally located on posterior valve. Jugal region smooth. Central areas with numerous, fine, slightly irregular, longitudinal ribs, up to 28 per side; dorsal edge somewhat sloping, ventral edge more abrupt; first few dorsal ribs not reaching preceding valve. Lateral triangle sharply elevated, with 3–6 nodular, radiating ribs; nodes on posterior rib longitudinally elongate. Terminal areas with similar radial sculpture, up to 25 on anterior and posterior valves. New radial ribs begin anew between existing ribs. Shell color grayish white with a few darker speckles at jugum or, more commonly, cream orange or reddish brown. Girdle very light orange or alternately banded white and light orange. Interior of valves white to dull greenish white.

Insertion plates: Intermediate valves with a single slit per side; insertion teeth well grooved, but not deeply pectinate. Anterior valve with 10 teeth; posterior valve with 13 teeth.

Hypostracum: Jugal tract in central depression with numerous transverse slits

and continuous over callus as small holes in posterior depression. Primary slit-ray with longitudinally elongate slits on callus, more circular, smaller slits in posterior depression. Secondary slit-ray absent.

Girdle scales: Moderate in size, rather ovate, with reticular sculpture predominate except near apex where large, fairly close-packed nodules are arranged in rows. Apical shelf lacking (Fig. 14).

Remarks. — *Rhyssoplax ectypa* is distinguished from *R. discolor* by its more sharply defined lateral triangle, more abrupt post-mucral slope on the posterior valve, narrower ribs of the central area which are strongest near the lateral triangle, and by the fact that as the animal grows, additional ribs of the lateral triangle and end valves begin separately between existing ones, not as bifurcations of previous ribs. The girdle scales of the two species greatly differ (Figs. 13, 14). In *R. ectypa* the scales are ovate rather than roundly triangular and the characteristic apical shelf of *R. discolor* is lacking. The apical pustules of *R. ectypa* are linearly arranged, not random as in *R. discolor*. Certain structural aspects, such as the sharply defined lateral triangle and the manner by which new ribs are added, indicate that *R. ectypa* is most closely related to the more northern *R. komaiana* (Is. & Iw. Taki, 1929), which may be differentiated by its more inflated girdle scales and more pronounced ribs of the central areas of the intermediate valves.

Rhyssoplax ectypa has not been recognized as a valid taxonomic entity since its original description by Rochebrune (1884). At least five species of *Rhyssoplax* are now reported from New Caledonia: *Rhyssoplax subassimilis* (Souverbie, 1866), known only by the holotype (Strack 1986); the abundant *R. discolor* (Souverbie); and the uncommon *R. ectypa*, *R. rhynchota* (Rochebrune, 1884), and *R. pulcherrima* (Sowerby, 1842). *Gymnoplax ludoviciae* Rochebrune, 1884 [syntype IRSN], stated to be from New Caledonia, is *Chiton (Chondroplax) granosus*

Frembly, 1827, from the Pacific coast of South America. *Gymnoplax alphonsinae* Rochebrune, 1884 [syntypes IRSN and MNHNP], also stated to be from New Caledonia, is actually *Rhyssoptax aerea* (Reeve, 1847) from New Zealand.

Distribution.—*Rhyssoptax ectypa* is known only from New Caledonia.

Locality records.—New Caledonia: (BMNH, IRSN, MNHNP); 0–4 ft [0–1.2 m], Thio, New Caledonia (ANSP).

Rhyssoptax sp.

Figs. 9, 15

Remarks.—The collections of the ANSP and USNM include a few examples of small *Rhyssoptax* that possibly are juveniles of one or more species. The shell sculpture is reminiscent of that of *R. ectypa* from New Caledonia. The girdle scales from the different localities vary in the size of the apical pustules, the linearity of these pustules, the existence of small riblets that extend from the pustular region ventrally to the reticular sculpture, and the presence in some cases of broader ribs. I figure an example from the Samoan Islands (Fig. 9) and a girdle scale from it (Fig. 15).

Locality records.—New Hebrides: rocky reef flat, ESE of Inyeung Is., Aneityum (USNM).—Tonga Islands: Niuafoou Is. (USNM).—Hoorn Islands: over the outside fringing reef, NW of Mua, Alofi (USNM).—Samoan Islands: Asili, Tutuila (USNM); Pago Pago, Tutuila (USNM); east side of Vaialele Bay, Upolu Is. (ANSP).

Rhyssoptax pulcherrima (Sowerby, 1842)

Fig. 11

Chiton pulcherrimus Sowerby, 1842:103 (Gindulman, ins. Bohol, Philippinarum; type in BMNH).—Leloup, 1952:34, pl. 1, fig. 2; pl. 4, fig. 1; text-fig. 13 [girdle elements and esthetes fig'd.].

Ischnochiton pulcherrimus (Sowerby).—Pilsbry, 1893:130, pl. 27, fig. 47, 48.

Chiton reticulatus Nierstrasz, 1905:81, pl.

2, fig. 36; pl. 7, figs. 195–199 (Insel Sanguisiapo, 12 m; Saleyer; syntypes in ZMA). Non Reeve, 1847, nec Dupuis, 1918.

Rhyssoptax excellens Iredale & Hull, 1926: 181, pl. 19, figs. 22, 27, 40 (Darnley Island, Torres Strait; type in Macleay Museum, Sydney) [description].—Iredale & Hull, 1927:116, pl. 13, figs. 22, 27, 40.—Mackay, 1934:150, pl. 16

Chiton (Rhyssoptax) excellens capricornensis Ashby, 1928:169, pl. 12, figs. 1, 13 (Capricorn Group; location of type unknown).

Rhyssoptax nierstrasziana Kaas, 1957:85 (new name for *C. reticulatus* Nierstrasz, 1905, non Reeve, 1847).

Remarks.—*Rhyssoptax pulcherrima* differs from all other *Rhyssoptax*, and all other Chitoninae, by its cancellate sculpture of the central areas. This species has been redescribed on a number of occasions because it seems that authors have been unwilling to recognize its broad distribution. Australian workers in particular have maintained that their specimens represented a species different from the one in the Philippine Islands.

Pilsbry (1893) considered this species to be an *Ischnochiton*, but an examination of the radula, especially the denticle cap of the major lateral tooth, indicates its chitonid affinities. A study of the shell morphology of the Siboga Expedition material revealed that *Chiton reticulatus* Nierstrasz, 1905, is this species, and its renaming by Kaas (1957) was unjustified. *Rhyssoptax komaiana* (Is. & Iw. Taki, 1929), which occurs sympatrically with *R. pulcherrima* in at least Malaysia, the Philippines, and possibly south to the Admiralty Islands (ANSP 182204), differs by its rounded valves and lack of cancellate sculpture. The prominent central ribs on the girdle scales of *R. pulcherrima* (Fig. 11) easily distinguish this species from other carinate *Rhyssoptax*.

Distribution.—A tropical species, *Rhys-*

soplax pulcherrima occurs from Thailand to the Philippine Islands and south to Queensland, Australia, the New Hebrides, and New Caledonia.

Locality records.—Thailand: Pulau Tanga, Butang Group (USNM); coral rubble reef, 3 mi [4.8 km] S of Airport Beach, Phuket Is., Andaman Sea (ANSP); Koh Chang, Gulf of Siam (ZMK).—Malaysia: Pulau Siburu, N of Sipora, SW of Sumatra (USNM); Pising Is. (IRSN); N shore of Toba Is., N end of Aru, Molucca Is. [5°21'S, 136°27'E] (WAM).—Philippine Islands: Gindulman, Bohol Is. (BMNH); rock shore at Cabcaban, SE Bataan, Luzon Is. (ANSP).—New Hebrides: Anelgauhat, Aneityum Is., on *Turbo marmoratus* L. (ANSP).—New Caledonia: 4–7 ft [1.2–2.1 m], barrier reef, 5 mi [8 km] WSW of Gatope Is., Voh, SW New Caledonia (ANSP).

Rhyssoplax spinosetata
(Bergenhayn, 1930)

Figs. 7, 12

Chiton spinosetatus Bergenhayn, 1930:24, pl. 1, figs. 17–28; pl. 2, figs. 29–31 (Viti Levu, Fiji Islands; type in NRS).

Description.—Animal medium to small in size, reaching a length of 22 mm, a width of 14 mm. Valves fairly carinate, angle about 100°. Anterior valve straight to convex; post-mucral slope of posterior valve straight to slightly concave. Mucro rather blunt, slightly anteriorly acentric on posterior valve. Jugal region smooth; central area with up to 20 well formed longitudinal ribs per side, usually all reaching preceding valve; dorsal edge of each rib somewhat sloping, lateral edge abrupt. Lateral triangle with 5–8 radiating, occasionally bifurcating rows of low, broad nodules. Terminal areas with similar radial sculpture, up to 41 rows on anterior valve, 29 on posterior valve. Shell color variable. Some specimens dark brown with scattered lighter, maculated areas and dark girdle of yellowish white scales irregularly

banded with dark brown. Other specimens much lighter, usually yellowish green maculated with small greenish brown markings, or yellowish white with similar maculations with lateral areas orange; girdle alternately banded yellowish white and dull green. Interior of valves blue or white with bluish green to dull green streak extending from mucro along slope of posterior depression.

Insertion plates: Intermediate valves with a single slit per side, occasionally doubly slit; insertion teeth highly grooved, not deeply pectinate. Anterior valve with 9–12 teeth; posterior valve with 11–15 teeth.

Hypostracum: Much of central depression with irregular thin grooves and slits. Primary slit-ray well developed, with prominent diagonal slits. Secondary slit-ray lacking.

Girdle scales: Moderately large, rather smooth; fine reticular sculpture ventrally; central area smooth with obsolete striations; apical area sharply defined by close-packed pustules of moderate size.

Remarks.—A comparison of Bergenhayn's type specimen of *R. spinosetata* with additional specimens collected from the Fiji Islands has firmly established the identity of *R. spinosetata*, although slight differences exist between populations. *Rhyssoplax spinosetata* appears to be related most closely to two New Zealand species, *R. stangeri* (Reeve, 1847) and *R. canaliculata* (Quoy & Gaimard, 1835).

Distribution.—*Rhyssoplax spinosetata* is apparently endemic to the Fiji Islands.

Locality records.—Fiji Islands: Kaba, Viti Levu (ZMU); N shore of Nananu-i-ra Is., 3 mi [4.8 km] N of Port Ellington, NNE Viti Levu (ANSP, MCZ); fringe reef, Korolevu, Viti Levu (ANSP, MCZ).

Rhyssoplax perviridis (Carpenter, 1865)
Figs. 1, 2

Chiton (Lophyrus) perviridis Carpenter, 1865:511 (Central Pacific [type locality

here restricted to Tahiti, Society Islands]; holotype MCZ 141125).

Chiton (Clathropleura) pacificus Thiele, 1910:93, pl. 10, figs. 1–4 (Huahine and Anaa [Society Is.]; type in ZMHU).

Description.—Animal rather small, attaining a length of 13 mm, a width of 8.5 mm. Valves subcarinate, angle about 105°. Anterior valve straight; post-mucral slope of posterior valve concave. Mucro moderately sharp, anteriorly acentric on posterior valve. Jugal region smooth. Central areas with up to 17 longitudinal ribs, the more dorsal ones not reaching preceding valve; dorsal surface of each rib sloping, ventral edge abrupt. Lateral triangle elevated, with 4–6 weak, low-noduled ribs. Terminal areas with similar radial sculpture; ribs obsolete. Shell color usually yellowish white; lateral edge of each longitudinal rib translucent brown or dark green. Small, irregular greenish brown flecks on lateral triangle; larger splotches along anterior edge of lateral triangle and occasionally along posterior edge. Some immature specimens smoother, totally green. Girdle alternately banded light blue-green and yellowish white. Interior of valves white.

Insertion plates: Intermediate valves with a single slit per side; insertion teeth highly grooved, moderately pectinate. Anterior valve with 10–11 teeth; posterior valve with 11–12 teeth.

Hypostracum: Jugal tract of central depression with scattered transverse slits; entire central depression nearly transparent. Primary slit-ray with prominent slits on callus, a row of irregular small holes in posterior depression.

Girdle scales: Rather large, roundly triangular, moderately inflated; reticular sculpture ventrally; 14–17 broad ribs on central area, thinning near apex; small number of close-packed pustules at apex; apical shelf barely evident.

Remarks.—The unique type of *R. perviridis*

(Fig. 2), formerly in the Pease collection, is in the Museum of Comparative Zoology. Although the label and the original description state the locality to be “Central Pacific,” Pease (1872) mentioned that the specimen was from Tahiti. The type locality is therefore restricted to Tahiti, Society Islands. Thiele (1910), who was no doubt unaware of the identity of Carpenter’s species, described *Chiton pacificus* on the basis of specimens from Huahine and Anaa, also in the Society Islands; an examination of Thiele’s type indicates it is conspecific with *R. perviridis*.

Rhyssoplax perviridis differs from the *Rhyssoplax* of neighboring island groups, but appears to be most closely related to *R. linsleyi* Burghardt, 1973, from the Hawaiian Islands and *R. whitleyi* Iredale & Hull, 1932, from the Cook Islands. *Rhyssoplax linsleyi* has more even radial sculpture and the longitudinal ribs of the central areas are somewhat better formed. *Rhyssoplax perviridis* is easily differentiated from *R. whitleyi* by lacking the stronger longitudinal ribs of the central area and the low, but prominent, nodules of the lateral triangle. The girdle scales of all three species are quite similar, except that those of *R. linsleyi* have thin ribs in the central area while those of *R. perviridis* and *R. whitleyi* have broad ribs.

Distribution.—*Rhyssoplax perviridis* is known only from the Society and Tubuai Islands.

Locality records.—Society Islands: (MCZ, USNM); W of Motu Tapu, Bora Bora Is.; Arue, Tahiti; E side of Taunoa Pass, Tahiti (all USNM); fringe reef, opposite pass, Punaevia, Tahiti (ANSP, MCZ); Huahine; Anaa (both ZMHU).—Tubuai Islands: W of wharf, Moerai, Rurutu (USNM).

Rhyssoplax whitleyi Iredale & Hull, 1932
Fig. 8

[?] *Chiton (Clathropleura) alphonsinae* ‘Rochebrune’ Thiele, 1910:93 [in part]. Non Rochebrune, 1884.

Rhyssofax whitleyi Iredale & Hull, 1932: 145, pl. 9, figs. 15, 16 (Rarotonga, Cook Islands; type in AMS [not seen]) [description].

Remarks.—*Rhyssofax whitleyi* is distinguished from other *Rhyssofax* from the central Pacific by its yellowish brown and blue coloration and by the prominent low nodules on the lateral triangle. Its girdle scales are moderately large, roundly triangular with reticular sculpture evident ventrally and at sides; there are 8–10 broad ribs on the central area and moderate-sized pustules on a flattened apical area. *Rhyssofax whitleyi* differs from *R. perviridis* by having better formed longitudinal ribs on the central areas. In *R. spinosetata* from the Fiji Islands, the nodules are less pronounced and the scales (Fig. 12) very weakly striated, not distinctly striated as in *R. whitleyi*. Also, the apical pustules of the girdle scales of *R. spinosetata* are sharply limited to the apex, and not converging into the central area ribs as in *R. whitleyi* and *R. perviridis*.

Distribution.—*Rhyssofax whitleyi* has only been recorded from the Cook Islands.

Locality records.—Cook Islands: Avatiu Harbor to Motu Toa, Rarotonga (USNM); 0.25 mi [0.4 km] N of Matavera, NE Rarotonga (ANSP, MCZ); Koromiri Is., SE Rarotonga (ANSP); Avaavaroa Passage, S Rarotonga (ANSP); fringe reef off Aroa Creek, SW Rarotonga (ANSP).

Subgenus *Anthochiton* Thiele, 1893

Anthochiton Thiele, 1893:377. Type species by monotypy, *Anthochiton tulipa* (Quoy & Gaimard, 1835).

Remarks.—The name *Anthochiton* has been used for *Rhyssofax*-like species that have a smooth lateral triangle and end valves. It appears useful at this time to use this name to denote a separate lineage within the genus *Rhyssofax* that is characterized by these features. The taxonomic status of nomina associated with *Rhyssofax*, such

as *Anthochiton*, *Tegulaplast* Iredale & Hull, 1926, *Delicatoplast* Iredale & Hull, 1926, and *Mucrosquama* Iredale & Hull, 1926, must await detailed radular and anatomical studies.

Rhyssofax (Anthochiton) rhynchota (Rochebrune, 1884)

Figs. 6, 10

Gymnoplast rhynchotus Rochebrune, 1884: 39 (Nouvelle Calédonie; type not found in the MNHNP).—Pilsbry, 1894:100.

Rhyssofax rhynchotus (Rochebrune).—Risbec, 1946:163, fig. 18 (anatomy, esthetes, radula).

Non *Chiton (Clathropleura) rhynchotus* 'Rochebrune' Thiele, 1910:92, pl. 9, figs. 52–55 [= *Rhyssofax crawfordi* (Sykes, 1898)].

Description.—Animal rather small, reaching a length of 9.5 mm, a width of 5.5 mm. Valves subcarinate, angle about 90°. Mucro rather blunt, anteriorly acentric on posterior valve. Jugal region smooth. Central areas with up to 12 well formed longitudinal ribs per side. Lateral triangle smooth, often somewhat inflated. Terminal areas smooth. Shell color tan, yellowish green, or light orange, often with irregular darker markings. Girdle similarly colored. Interior of valves white.

Insertion plates: Intermediate valves with a single slit per side; insertion teeth appearing smooth but obsoletely grooved.

Hypostracum: Jugal tract with numerous, faint transverse grooves. Primary slit-ray with many longitudinally elongate slits.

Girdle scales: Moderate in size, ovate to rectangular; reticular sculpture ventrally, about 21 broad, close-packed ribs on central and apical areas (Fig. 10).

Remarks.—*Rhyssofax rhynchota* is characterized by its small size, strong longitudinal ribs of the central areas, and slightly inflated lateral triangle. The specimen marked "type" in the MNHNP is not this species. This latter specimen was figured and

described by Thiele (1910) as an example of Rochebrune's species, but an examination of the valves (Fig. 5), which clearly have a concave lateral triangle, and the girdle scales reveal it to be a young example of *R. crawfordi* (Sykes, 1898) from South Africa.

The nearly smooth insertion teeth of *R. rhynchota* are unusual for Chitoninae. A check of the radular proved it to be typically chitonid.

Distribution.—*Rhyssoplax rhynchota* occurs from the Bismarck Archipelago south to New Caledonia.

Locality records.—Bismarck Archipelago: New Ireland (BMNH).—New Caledonia: (MNHNP); Oubatche (AMS); N tip of Santa Marie (Isle Ngéa), Magenta, Noumea; 0–3 ft [0–0.9 m], W end, Ricaudy Reef, Noumea; 4–7 ft [1.2–2.1 m], barrier reef, 5 mi [8 km] WSW Gatope Is., Voh (all ANSP).

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